

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-232-11
Relating to Certification of New Heavy-Duty Motor Vehicle Engines

RENAULT VEHICLES INDUSTRIELS

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102, and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-3;

IT IS ORDERED AND RESOLVED: That the following Renault Vehicules Industriels 1987 model-year diesel engines have shown compliance with the transient test procedures and standards and are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating (GVWR) over 8,500 pounds:

<u>Engine Family</u>	<u>Displacement Cubic Inches (Liters)</u>	<u>Exhaust Emission Control Systems (Special Features)</u>
HRE0335FPA1	335 (5.5)	Smoke Puff Limiter (Turbocharger) (Intercooler) (Diesel Injection-Direct)
HRE0538FAA2	538 (8.8)	Engine Modification (Turbocharger) (Intercooler) (Diesel Injection-Direct)

Engine models and codes are listed on attachments.

The following are the certification emission values for these engine families:

<u>Engine Family</u>	<u>Hydrocarbons gm/bhp-hr</u>	<u>Carbon Monoxide gm/bhp-hr</u>	<u>Nitrogen Oxides gm/bhp-hr</u>
HRE0335FPA1	0.6	7.2	4.9
HRE0538FAA2	0.5	1.8	4.9

BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations (Title 13, California Administrative Code, Section 2036).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this order.

Executed at El Monte, California this 4th day of February, 1987.


K. D. Drachand, Chief
Mobile Source Division

1987 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET

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Manufacturer RENAULT VEHICULES INDUSTRIELS Engine Family HRE0335FPA1;0538FAA2
Evaporative Family NA Engine Type I6 ; I6
Liters (CID) 5.5 (335) ; 8.8 (538)

ABBREVIATIONS

Ignition System

CA-Centrifugal Advance
EEC-Electronic Engine Control
EI-Electronic Ignition
ESAC-Electronic Spark Advance Control
VA-Vacuum Advance
VR-Vacuum Retard

Exhaust Emissions Control System

AIP-Air Injection-Pump
AIV-Air Injection-Valve
CL-Closed Loop
EGR-Exhaust Gas Recirculation
EM-Engine Modification
OC-Oxidation Catalyst System
SPL-Smoke Puff Limiter or Throttle Delay
TOC-Trap Oxidizer, Continual
TOP-Trap Oxidizer, Periodical
TR-Thermal Reactor
TWC-Three-Way Catalyst System

Special Features

CCV-Combustion Chamber Valve
CFI-Central Fuel Injection
DID-Diesel Injection-Direct
DIP-Diesel Injection-Prechamber
EFI-Electronic Fuel Injection
IC-Intercooler or aftercooler
MFI-Mechanical Fuel Injection
TC-Turbocharger

Fuel System

CFI, CL, DID, DIP, EFI, MFI
nV-nVenturi Carburetor

ENGINE
VEHICLE MODELS: SEE PG. 2 & 3.

Engine: Front _____ Mid. _____ Rear _____

Drive: FWD _____ RWD _____ 4WD Full Time _____ 4WD Part Time _____

1987 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESManufacturer RENAULT VEHICULES INDUSTRIELS Engine Family HRED335FPA1Liter (CID) 5.5 (335) Eng. Type In-Line 6Emission Control Sys. and (Special Features) SPL (TC) (IC) (DID)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)
MIDR060212E	R.Bosch GmbH 5000 134 504	R.Bosch GmbH 5000 659 162	164 at 2800	75 (69.2)	373 LbFt at 1800	79 (46.9)
MIDR060212F	R.Bosch GmbH 5000 134 507	R.Bosch GmbH 5000 659 162	165 at 2600	77 (66)	373 LbFt at 1800	79 (46.9)

Date of Issue 013087 Revisions:

1987 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINESManufacturer RENAULT VEHICULES INDUSTRIELS Engine Family HRED538FAA2Liter (CID) 8.8 (538) Eng. Type In-Line 6Emission Control Sys. and (Special Features) EM (TC) (IC) (DID)

Engine Model	Fuel Injection Pump Mfr. Part Number	Injector Mfr. Part Number	Maximum Rated HP at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)	Maximum Rated Torque at RPM	Fuel Rate mm ³ /stroke (lbs/Hr)
MIDR062030C	R.Bosch Gmbh 5000 788 290	R.Bosch Gmbh 5000 785 794	204 at 2300	108 (82)	542 LbFt at 1500	104 (51.4)

Date of Issue 013087 Revisions: